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Interesting distributional records and notes on the biology of bird species from a cloud forest reserve in north-west Ecuador

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Received 1 January 2003

Even in well-studied countries, such as Ecuador, new distributional records and range extensions are regularly reported as unexplored or poorly known areas are surveyed (e.g. Krabbe 1992, Krabbe *et al.* 1997, Freile 2001a). In this note we present new records, as well as latitudinal and altitudinal range extensions for several species, taking Ridgely & Greenfield (2001) as our baseline. Our records are based on studies carried out at Bosque Integral Otonga (hereafter Otonga), from March 1999 to February 2002 (see also Chaves 2001). Elevation is given within each species account. Taxonomy follows Ridgely & Greenfield (2001).

Study area

Otonga is a private reserve located in north-west Cotopaxi province (00°25'S, 79°00'W), on the outer slopes of the western Andes, ranging from *c.*1,300 to 2,200 m elevation. It is located *c.*5 km west of San Francisco de Las Pampas, in the middle section of the Toachi river drainage, adjacent to the Río Lelia Protection Forest (*c.*4,000 ha), and less than 20 km north of the large Los Illinizas Ecological Reserve (149,900 ha) (Fig. 1). It comprises *c.*1,000 ha of primary montane cloud forest, secondary forest and some degraded areas (Jarrín 2001). Our surveys were restricted to altitudes above 1,700 m due to the inaccessibility of lower areas. The bird community at Otonga has not been previously studied, but it resembles that of other cloud forest sites further north (Chaves 2001), and especially the avifauna of a site located nearly 30 km to the south, also in Cotopaxi province (Caripero area; N. Krabbe, *in litt.* 2003).

Vegetation at Otonga is characterised by the diversity and abundance of epiphytic plants, especially bromeliads, aroids and mosses, and by several tree species typical of Andean cloud forests of north-western Ecuador (Jarrín 2001, Nowicki 2001).

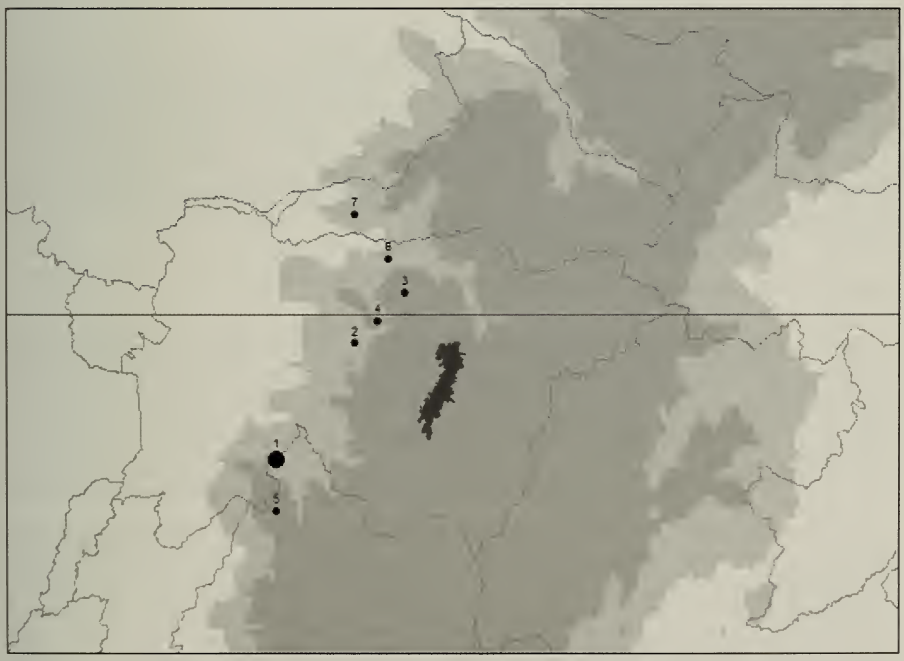

Figure 1. Map of Pichincha and Cotopaxi provinces, and adjacent areas, north-western Ecuador, showing the Bosque Integral Otonga (large circle, number 1) and other localities mentioned more than once in the text. Scale 1: 2,000.000. 1 Bosque Integral Otonga, 2 Mindo, 3 Reserva Maquipucuna, 4 Tandayapa, 5 Caripero, 6 Palmitopamba, 7 Los Cedros Reserve. Light grey: areas above 1,000 m elevation; dark grey: areas above 2,000 m; blackish grey: Quito city.

Species accounts

SEMICOLLARED HAWK *Accipiter collaris*

This rare and Near Threatened, though probably under-recorded hawk is known from very few sites along the Andes of Ecuador, with recent records from the western slope concentrated in the Mindo-Tandayapa area (BirdLife International 2000, Ridgely & Greenfield 2001). At Otonga an *Accipiter* thought to be this species was recorded on two separate occasions, at 1,900 m elevation. One was seen soaring above a cleared area adjacent to primary forest in July 2000, and one was seen briefly, attacking a flock of Dusky Bush-tanagers *Chlorospingus semifuscus*, in a secondary forest edge in February 2002. It was distinguished from other *Accipiter* species that might occur at Otonga (Plain-breasted *A. ventralis* and Bicoloured Hawks *A. bicolor*) by its heavily banded underparts (excluding whitish chin and throat) and relatively small size (see Ridgely & Greenfield 2001). It was also distinguished from *Micrastur* forest-falcons by its smaller size, whitish throat and chin, tail bars of similar length, and because forest-falcons never soar (R. S. Ridgely, pers. comm., 2003). Otonga is located *c.*60 km to the south of Mindo-Tandayapa area. Further sightings are necessary to confirm its status in the Otonga area.

BLACK-AND-CHESTNUT EAGLE *Oroaetus isidori*

At Otonga one was seen attacking a flock of three Sickle-winged Guans *Chamaepetes goudotii* on 15 December 1999, and in February 2003 one was briefly seen soaring above a largely forested area. This rare and Near Threatened eagle is known from only a handful of sites in the western Andes of Ecuador, primarily from western Pichincha province, but has also been recorded from the Caripero area, 30 km to the south of Otonga (Ridgely & Greenfield 2001).

WATTLED GUAN *Aburria aburri*

Several were heard and tape-recorded inside secondary and primary forest from 1,800 to 2,000 m elevation, and occasionally from forest borders along abandoned pasture areas. Vocalisations were not heard between February and March, the wettest months in the area, suggesting either that this species migrates seasonally (see Fjeldså & Krabbe 1990, Freile 2001b), or that vocal activity is restricted to other months of year. Ranked as Vulnerable in Ecuador and as Near Threatened globally (BirdLife International 2000, Pacheco 2002), there are very few records in the western Andes of Ecuador, wherein it is only known from the Mindo-Tandayapa-Maquipucuna area and from Las Pampas region (Marín *et al.* 1992, Ridgely & Greenfield 2001). Otonga constitutes its southernmost locality in the western Andes of Ecuador (Ridgely & Greenfield 2001). Hunting of this species in the Otonga area seems very infrequent, as it is fairly common even at forest borders. The presence of this species at Otonga is apparently an indicator of the good condition of forests in the area (N. Krabbe, pers. comm. 2003).

DARK-BACKED WOOD-QUAIL *Odontophorus melanonotus*
The distribution of this species extends south to western Cotopaxi wherein it is known from the Otonga and Caripero areas (Ridgely & Greenfield 2001). At Otonga at least seven family groups were regularly recorded along 10 km of transects (in an area of *c.* 100 ha) mainly in continuous primary or secondary forest floor, but also in small remnant patches of forest surrounded by pastureland and sugarcane crops. Most groups constituted one adult male, one adult female and at least two juveniles. On two occasions groups were observed ascending up to 12–13 m into forest subcanopy before dusk.

MAROON-TAILED PARAKEET *Pyrrhura melanura*
Groups of 2–5 individuals were recorded at the reserve up to 2,200 m elevation. We recorded it in February 1998, March 1999 and August 1999, but not in September–November 2000 and February 2002, suggesting that it may make seasonal or erratic movements. Flocks were seen eating *Ficus* spp. (Moraceae) and *Alchornea* sp. (Rubiaceae) fruits and flying over both forested and open areas. Previously only reported up to 1,900 m in western Ecuador (Ridgely & Greenfield 2001), in the Caripero area (R. S. Ridgely, pers. comm., 2003).

LITTLE CUCKOO *Piaya minuta*
One was seen at close range perching in 4-m tall bushes and in a secondary forest border on 20 February 2002, at 1,900 m elevation. In western Ecuador this species has been reported up to 1,500 m (at Mindo and Maquipucuna, see Ridgely & Greenfield 2001; and at Palmitopamba and Los Cedros Reserve, pers. obs.). As the Little Cuckoo was not recorded during previous visits to Otonga, it may not be resident. It has been seen occasionally around Tandayapa Bird Lodge, Pichincha province, up to 1,750 m (R. S. Ridgely, pers. comm., 2003).

RUFESCENT SCREECH-OWL *Otus ingens colombianus*
Otonga constitutes the southernmost site for this taxon in the western Andes of Ecuador (Fitzpatrick & O'Neill 1986, Freile & Chaves 1999), but is within the range estimated by Krabbe *et al.* (1998). The taxon *colombianus* has previously been considered as a species (Krabbe *et al.* 1998, Freile & Chaves 1999), an opinion supported by its vocalisations (N. Krabbe, *in litt.* 2003).

OILBIRD *Steatornis caripensis*
The Oilbird is a scarce and local species, with records scattered throughout the Ecuadorian Andes (Ridgely & Greenfield 2001). At Otonga flocks of 4–20 were seen and tape-recorded in September–October 2000, foraging at primary forest tree fall gaps, at 2,000–2,100 m. Birds were seen taking fruits of *Nectandra* sp. (Lauraceae) and *Wettinia* sp. (Arecaceae). Its presence at Otonga is apparently seasonal, being apparently absent from December through August.

GREEN-FRONTED LANCEBILL *Doryfera ludovicae*
This hummingbird was previously known to occur up to 1,700 m on the western slope of the Andes (1,900 m on the eastern slope) (Ridgely & Greenfield 2001). At Otonga we mist-netted one female on a secondary forest ridge at 2,100 m elevation, on 26 February 2002. This was the only record of this inconspicuous species in the reserve, suggesting that it is either not numerous or it undertakes seasonal movements.

EMPRESS BRILLIANT *Heliodoxa imperatrix*
Ranked as Vulnerable within Ecuador (Ortiz-Crespo 2002), due to habitat loss within its limited distribution, and because of its relative natural rarity (Ridgely & Greenfield 2001), this striking hummingbird is known from very few sites in the western Andes of Ecuador, south to northern Pichincha province (Mindo area) (Ridgely & Greenfield 2001, Ortiz-Crespo 2002). At Otonga we mist-netted two females inside primary and secondary ridge-top forests at 2,100–2,200 m, and observed one adult male feeding on introduced *Abutilon* sp. (Malvaceae) and native plants (families Solanaceae and Rubiaceae) along a secondary forest border. Our record at Otonga constitutes a 60 km southward range extension.

GORGETED SUNANGEL *Heliangelus strophianus*
Near endemic to the north-western Andes of Ecuador. Its distribution extends continuously to northern Cotopaxi and apparently patchily south to El Oro province (Ridgely & Greenfield 2001); however, this might be due to poor knowledge and under-collecting in the central portion of the western Andes of Ecuador (N. Krabbe, pers. comm. 2003). At Otonga it was frequently recorded between 1,800 and 2,200 m elevation in primary and secondary forests, as well as forest borders and partially deforested areas. It was seen feeding on several plant species, especially on bromeliads (*Guzmania variegata*, *G. squarrosa* and *Tillandsia truncata*; see Castañeda 2001), and *Abutilon* sp. (introduced Malvaceae), an unidentified Solanaceae, *Posoqueria* sp. (Rubiaceae), another species of Rubiaceae and three species of Gesneriaceae. A nest, found in July 2000, was a shallow cup constructed mainly of moss and fine plant fibres, attached with spider web fibres, and was well hidden under a wet rocky wall 2.3 m above ground. It contained two eggs. This species has not been accorded any threat status to date. Nevertheless, we suspect it should be ranked as Near Threatened as it occurs in a very restricted distributional range (both altitudinal and latitudinal), and apparently prefers forested areas (at least is more numerous there), which are currently being destroyed at a fast rate (Sierra *et al.* 1999).

WHITE-FACED NUNBIRD *Hapaloptila castanea*
Previously recorded from very few sites in western Ecuador south to western Pichincha province (Tandayapa-Mindo area) and from a few sites along the eastern slope of the Andes (Ridgely & Greenfield 2001). At Otonga it was apparently rare

(<10 records during our three-year study), between 1,800 and 2,100 m altitude, and found only inside primary and tall secondary forest. Otonga represents the southernmost site for this species in western Ecuador, > 60 km south of Tandayapa-Mindo. According to the ranges estimated by Krabbe *et al.* (1998), northern Cotopaxi province (*c.*20 km south of Otonga) may be the southern limit of its distribution in western Ecuador, but there are no confirmed records there to date (R. S. Ridgely, pers. comm. 2003). Ridgely & Greenfield (2001) suggested that this species should be considered Data Deficient because it occurs at low densities along its whole range, even being absent from apparently suitable areas. We suggest that it should actually be ranked as Vulnerable within Ecuador (and Near Threatened globally?) due to its fairly limited distribution over an area with heavy human pressure (see Sierra *et al.* 1999), its preference for forested areas, and its probable natural rarity. It is currently known from a few privately protected forests in Ecuador (Cerro Golondrinas, Maquipucuna, Bellavista, Otonga, San Isidro), but its presence in the Sistema Nacional de Áreas Protegidas (National Protected Areas Network) is not yet confirmed.

TOUCAN BARBET *Semnornis ramphastinus*

This species is frequently found along forested areas in the western Andes of northern Ecuador and southern Colombia, south to northern Cotopaxi province (Ridgely & Greenfield 2001). At Otonga it was numerous inside primary and secondary forests, as well as along forest borders and open areas with tall standing trees, between 1,700 and 2,200 m. It was seen feeding on fruits of several tree species, but *Cecropia* spp. (Cecropiaceae; two species) and *Ficus* spp. (Moraceae; three species) were the most important food resources (for which this barbet is an important seed disperser; Chaves 2000). Although fairly numerous along its range, it is currently ranked as Near Threatened in Ecuador (Freile 2002) and globally (BirdLife International 2000).

RUSTY-WINGED BARBTAIL *Premnornis guttuligera*

In western Ecuador known from a handful of sites in western Pichincha province (Ridgely & Greenfield 2001), but its range has been estimated to extend south to northern Cotopaxi province (Krabbe *et al.* 1998), even though it has not been recorded in the Caripero area, 30 km south of Otonga, at appropiate elevations (R. S. Ridgely, pers. comm. 2003). At Otonga it was found inside primary and secondary forests between 1,900 and 2,200 m, mainly through mist-netting. It was occasionally seen accompanying mixed-species understorey flocks, but also in pairs or alone foraging at low heights in dense clumps of mosses and dead leaves. Otonga represents the southernmost site for this species in the western Andes, but gives further support to the range estimated by Krabbe *et al.* (1998). Two additional records from north-western Ecuador at Intag Cloud Forest Reserve, Imbabura province (1,850 m) and Chilma Alto, Carchi province (2,200–2,300 m) (J. Nilsson, pers. comm. to R. S. Ridgely) also fill in the apparent discontinuity in this species' distribution.

TAWNY-THROATED LEAFTOSSER *Sclerurus mexicanus*
This widespread species was previously known to occur in Ecuador locally up to 1,500 m (< 1,650 m in the eastern Andean slope) (Ridgely & Greenfield 2001). At Otonga a pair was seen inside primary forest at 2,000 m in September 2000. In February 2002 one was mist-netted, measured and photographed at 1,850 m. The only additional high-altitude record of which we are aware comes from the Tandayapa region, where it has also been recorded up to 2,000 m (M. Tellkamp, pers. comm. 2002).

SPILLMANN'S and NARIÑO TAPACULOS *Scytalopus spillmanni* and *S. vicinior*
These two species replace each other altitudinally along the Andes of north-western Ecuador and south-western Colombia, with Spillmann's inhabiting higher altitudes than Nariño (Ridgely & Tudor 1994, Ridgely & Greenfield 2001). At Otonga both species have been recorded from 1,900 up to 2,200 m inside primary and secondary forest, particularly in dense understorey, tree fall gaps and bamboo stands. Although they did not share territories or differ significantly in habitat choice, these two species showed a wider (300 m) altitudinal overlap at Otonga than recorded elsewhere (Krabbe & Schulenberg 1997, N. Krabbe, pers. comm. 2002). They responded to playback of each others' song, but Nariño Tapaculo was on average less aggressive. Natural features of the forest, such as ridgetops, tree fall gaps, trails, large dead logs or ravines were often the limits of territories. This intricate pattern of ecological overlap deserves further research to understand how these species segregate under syntopic situations (if they actually exclude each other). Similar patterns are also shown by several other tapaculo species (Krabbe & Schulenberg 1997), with altitudinal replacements and suture zones, rather than habitat segregation, being the most common situation (N. Krabbe, pers. comm. 2002).

BRONZE-OLIVE PYGMY-TYRANT *Pseudotriccus pelzelni*
Its distribution in western Ecuador is discontinuous, but the gap between southern Pichincha and northern Azuay provinces (Ridgely & Greenfield 2001) may be due to lack of collecting there. At Otonga this species was recorded frequently inside primary and secondary forests, particularly in dense understorey areas as re-growth tree fall gaps, between 1,800 and 2,000 m elevation. The Rufous-headed Pygmy-tyrant *P. ruficeps*, was also recorded at Otonga, but at slightly higher altitudes than the Bronze-olive. Although were not able to determine if both species were occurring in syntopy, overlap seems plausible as both were recorded at the same elevation (2,000 m), and in close proximity. This site is located *c.*30 km south of previously known records in northern Ecuador.

GREY-BREASTED MARTIN *Progne chalybea*
Several were observed flying above cleared areas on 22–23 February 2002, up to 1,750 m elevation. This numerous and widespread martin is more frequent at lower altitudes, but seems to undertake seasonal migratory movements (Ridgely &

Greenfield 2001). It was not recorded on our previous visits to Otonga or on subsequent days, suggesting that it is not a regular visitor or breeding species in the area. Unusually warm weather on the days of observations (pers. obs.) may account for its presence in the area.

BLACK-CHINNED MOUNTAIN-TANAGER *Anisognathus notabilis*
In Ecuador this species is mostly restricted to the north-west where it is known from few localities, but is also known from a few sites in the south-west (Ridgely & Greenfield 2001). At Otonga it was frequently found in primary and secondary forests, and in forest borders and open areas with tall standing trees, between 1,900 and 2,200 m. It was less numerous than the Blue-winged Mountain-tanager *Anisognathus somptuosus*, but it was regularly found accompanying mixed-species canopy flocks, and often only with *A. somptuosus*. The apparent absence of this species between Cotopaxi and El Oro provinces is possibly due to poor knowledge of this area (N. Krabbe, pers. comm. 2002).

YELLOW-BELLIED SISKIN *Carduelis xanthogastra*
There are few records of this species in western Ecuador (Ridgely & Greenfield 2001). Our only record at Otonga in three years was of two female-plumaged birds on 23 February 2002, perching and feeding in an isolated *Mimosa* tree in a degraded area next to a flowing stream, at 1,700 m. They were identified by the olive-coloured upperparts and foreparts, extending down to lower chest, and by the contrasting yellow wing patch 'uniformly' shaped (Ridgely & Greenfield 2001). Yellow-bellied Siskin may be either increasing in the north-western slopes of the Ecuadorian Andes, as suggested by Ridgely & Greenfield (2001), or it may make seasonal or nomadic movements along altitudinal or latitudinal gradients. A record from the Otonga area is mentioned in Ridgely & Greenfield (2001), but we are not aware of its source.

Other records

The Appendix below lists the birds we recorded at Otonga, including some endemics of the Chocó or West Slope of the Andes Endemic Bird Areas, as well as other threatened and Near Threatened species, both at national and global scales (BirdLife International 2000, Ridgely & Greenfield 2001, Granizo *et al.* 2002). Information on some of them (e.g. Cloud-forest Pygmy-owl *Glaucidium nubicola* and Moustached Antpitta *Grallaria alleni*) is published elsewhere (e.g. Freile & Renjifo 2003, Freile *et al.* 2003).

Acknowledgements

We are grateful to Richard Mellanby for his permanent support to our research at Otonga, and to the Royal Geographic Society and Glasgow Natural History Society for financial support. Thanks to Giovanni Onore for allowing us to work at Otonga, and especially to César Tapia and his family for taking care of the reserve and for their help and companionship in the field. Thanks to Gabriela Castañeda, Tatiana Santander, Fabián Cupuerán, José Hidalgo and David Parra for their help gathering field data, and to

Esteban Guevara, Gabriel Iturralde, Pilar Jiménez, Daniela Rosero, Juan Fernando Andrade, Anna Schubert and Montserrat Bejarano for field assistantship. Thanks also to Markus Tellkamp and Stewart White for sharing their field observations, and to Mauricio Vargas at MECN for letting us visit the bird collection. Niels Krabbe and Robert S. Ridgely kindly reviewed a previous draft of this paper and helped improve it.

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Appendix

List of birds recorded at Otonga (1,700–2,200 m). Threatened, Near Threatened and restricted-range species are emboldened; species only observed en route to the reserve (below 1,800 m) are marked with an *. Species recorded only by Markus P. Tellkamp in April 2002 are marked with a [1], and species recorded only by Stewart White *et al.* in July–August 2002 are marked with a [2].

Coragyps atratus, *Cathartes aura*, *Pandion haliaetus*[2], *Chondrohierax uncinatus**, *Elanoides forficatus*, ***Accipiter collaris***, ***Leucopternis princeps***, *Buteo magnirostris*, ***Oroaetus isidori***, *Micrastur semitorquatus*, *Falco sparverius*, ***Aburria aburri***, *Chamaepetes goudotii*, ***Odontophorus melanonotus***, *Columba fasciata*, *Columba plumbea*, *Geotrygon frenata*, *Pyrrhura melanura*, *Bolborhynchus lineola*, *Pionus sordidus*, *Piaya cayana*, *Piaya minuta*, *Crotophaga ani**, *Tapera naevia**, ***Otus ingens***, ***Glaucidium nubicola***, *Steatornis caripensis*, *Nyctibius griseus*, *Lurocalis rufiventris*, *Caprimulgus longirostris*, *Uropsalis lyra*, *Streptoprocne zonaris*, *Cypseloides rutilus*, *Phaethornis syrmatophorus*, *Doryfera ludovicae*, *Amazilia tzacatl**, *Adelomyia melanogenys*, ***Heliodoxa imperatrix***, *Heliodoxa rubinoides*, ***Coeligena wilsoni***, *Coeligena torquata*, *Boissonneaua flavescens*, ***Heliangelus strophianus***, ***Haplophaedia lugens***[2], *Ocreatus underwoodii*, ***Aglaiocercus coelestis***, *Pharomachrus auriceps*, *Trogon personatus*, *Hapaloptila castanea*, ***Semnornis ramphastinus***, *Anlacorhynchus haematopygus*, ***Andigena laminirostris***, *Piculus rivolii*, *Piculus rubiginosus*, *Veniliornis fumigatus*, *Campephilus pollens*, ***Furnarius cinnamomeus****, *Synallaxis azarae*, *Synallaxis unirufa*, *Cranioleuca erythrops**, *Pseudocolaptes boissonneautii*, *Margarornis squamiger*, *Premnoplex brunnescens*, *Premnornis guttuligera*, *Syndactyla subalaris*, *Anabacerthia variegaticeps*, *Thripadectes virgaticeps*, ***Thripadectes ignobilis***[1], *Sclerurus mexicanus*, *Dendrocincla tyrannina*, *Xiphocolaptes promeropirhynchus*, ***Xiphorhynchus erythropygius***, *Lepidocolaptes lacrymiger*, *Campylorhamphus pusillus**, *Formicarius rufipectus*, ***Grallaria gigantea***, ***Grallaria alleni***, *Grallaria ruficapilla*, *Myornis senilis*, ***Scytalopus vicinior***, *Scytalopus spillmanni*,

Pogonotriccus ophthalmicus, *Zimmerius chrysops*, *Mecocerculus poecilocercus*, *Serpophaga cinerea**, *Mionectes striaticollis*, *Mionectes olivaceus*[1], *Pseudotriccus pelzelni*, *Pseudotriccus ruficeps*, *Poecilotriccus ruficeps*, *Myiotriccus ornatus*, *Myiophobus flavicans*, *Pyrrhomyias cinnamomea*, *Contopus fumigatus*, *Sayornis nigricans*, *Ochthoeca diadema*, *Ochthoeca cinnamomeiventris*[1], *Myiarchus tuberculifer**, *Myiozetetes similis**, *Myiodynastes chrysocephalus*, *Tyrannus melancholicus*, *Pachyramphus versicolor*[1], *Pipreola riefferii*, *Lathria cryptolophus*[2], *Rupicola peruviana*, *Masius chrysopterus*, *Cyanolyca turcosa*, *Vireo leucophrys*, *Myadestes ralloides*, *Catharus fuscater*, *Turdus fuscater*, *Turdus serranus*, *Cinclus leucocephalus*, *Progne chalybea**, *Notiochelidon cyanoleuca*, *Stelgidopteryx ruficollis**, *Cinnycerthia olivascens*, *Troglodytes aedon**, *Troglodytes solstitialis*, *Henicorhina leucophrys*, *Parula pitiayumi**, *Dendroica fusca*, *Geothlypis semiflava**, *Myioborus miniatus*, *Basileuterus tristiatus*, *Basileuterus coronatus*, *Conirostrum albifrons*, *Diglossopis cyanea*, *Diglossa albilatera*, *Pipraeidea melanonota*, *Euphonia xanthogaster*, *Tangara arthus*, *Tangara parzudakii*, *Tangara ruficervix*, *Tangara nigroviridis*, *Tangara cyanicollis**, *Anisognathus somptuosus*, ***Anisognathus notabilis***, *Thraupis episcopus**, *Thraupis palmarum*, *Thraupis cyanocephala*, *Ramphocelus icteronotus**, *Piranga leucoptera**, *Chlorospingus canigularis*[2]*, ***Chlorospingus semifuscus***, ***Hemispingus melanotis***[2], *Catamblyrhynchus diadema*, *Pheucticus chrysogaster*, *Volatinia jacarina*[2], *Sporophila nigricollis*, *Atlapetes tricolor*, *Atlapetes leucopterus*, *Buarremon brunneinucha*, *Zonotrichia capensis*, *Carduelis xanthogastra**. Total= 155.

A new subspecies of Sclater's Monal *Lophophorus sclateri* from western Arunachal Pradesh, India

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Received 7 January 2003

Sclater's Monal *Lophophorus sclateri* T. C. Jerdon, 1870, is one of three species of monal (Phasianidae). It is a restricted-range species occurring within the Eastern Himalayas Endemic Bird Area D08 (ICBP 1992), where it is found in the remote high mountains of Arunachal Pradesh in India, south-east Tibet, northern Myanmar and western Yunnan in China (Ali & Ripley 1983, Smythies 1986, Johnsgard 1986, McGowan & Garson 1995). Sclater's Monal has remained poorly known and is currently considered Vulnerable (Collar *et al.* 2001; also Fuller & Garson 2000). Most published information on this species is more than 50 years old and is largely based on natural history notes from Bailey (1916), Beebe (1918–1922), Baker (1919), Kinnear (1934), Ludlow & Kinnear (1937, 1944), Ali & Ripley (1948) and Ludlow (1951). A few recent surveys and studies have produced some information on this species (Kaul & Ahmed 1992, 1993, Kaul *et al.* 1995, Singh 1994, 1999, Han 2001, Rimlinger *et al.* 2001).

Within Arunachal Pradesh, *L. sclateri* was thought to occur from 92º–93ºE eastwards through the Kameng, Subansiri, Siang and Lohit Districts (Ali & Ripley 1983). However, the confirmed westernmost record for this species is from Mechuka locality in West Siang District, central Arunachal Pradesh (Kaul *et al.* 1995), east of